

REMARKS

Claims 2-16 and 9-22 are pending. Claim 16 has been amended herein to correct a clerical error.

Clerical Error

Applicants note that claim 16 refers to "said premix" and should read --said composition--. Applicants have amended claim 16 herein to correct this error and thereby provide proper antecedent basis.

Applicants' Response to the Claim Rejections under 35 U.S.C. §102(b)

Claims 2-4, 7-10, 13-16 and 22 are rejected under 35 U.S.C. §102(b) as being anticipated by Singh et al. (WO 99/05204).

Applicants respectfully request favorable reconsideration on the basis that Singh does not teach each and every feature of the claimed invention either expressly or inherently.

(a) The Presented Claims are to a Premix

The present invention pursuant to parent claims 4, 16 and 22 relates to a premix for use in in-situ foaming. The premix composition contains a polyol, a curing catalyst, 1,1,1,3,3-pentafluoropropane (HFC-245fa), a foaming stabilizer, a vapor pressure reducing agent represented by formula (1) and having a total acid content of 650 mg KOH or less, etc and further is required to be free of isocyanate.

As set forth in the specification the composition is stored in the form of a premix composition and transported to a site where polyurethane foam is used (e.g., at a construction site), and foaming is performed at the site by mixing it with isocyanate. The premix composition of the present invention achieves in-situ foaming without difficulty and the obtained polyurethane foam exhibits sufficient flame retardancy. HFC-245fa is added to the premix composition from the beginning. This improves the efficiency in storage, preservation, transportation, and foaming operations, and accordingly reduces costs and enhances operational safety.

As disclosed on page 2, line 20 to page 3, line 4 of the present specification, HFC-245fa has a low boiling point of 15.3°C and a high vapor pressure. Accordingly, particularly in summer, HFC-245fa and premix compositions containing HFC-245fa need to be stored or transported in pressurized drums, and require careful handling. Furthermore, since HFC-245fa has no chlorine atoms, it is less compatible with polyol components as compared with HCFC-141b, which has chlorine atoms. Accordingly, the concentration of HFC-245fa in a premix composition is uneven.

The vapor pressure reducing agent used in the present invention achieves a vapor pressure reduction effect that can solve the above problems. Therefore, HFC-245fa can be added to the premix composition from the beginning as in Examples 1 to 15 of the present application. Because the vapor pressure reducing agent used in the present invention can effectively reduce the vapor pressure of HFC-245fa, a premix composition comprising the vapor pressure reducing

agent and HFC-245fa can be handled easily during storage or transportation. See page 15, lines 19 to 24 of the specification.

Furthermore, as disclosed on page 16, line 21 to page 17, line 3; and page 19, lines 4 to 7 of the specification, while HFC-245fa has a low solubility in polyols, the vapor pressure depressant increases the solubility of HFC-245fa in polyols to give a uniform premix composition. This allows HFC245fa to be contained in the premix composition from the beginning.

When the premix composition is stored for a long period of time, and if the vapor pressure reducing agent transforms into phosphoric acid, etc., by hydrolysis caused by water in the system, the polyurethane foaming is adversely affected. Therefore, excellent hydrolysis resistance is required of the vapor pressure reducing agent. Since the vapor pressure reducing agent used in the present invention has a total acid content of 650 mg KOH or less, hydrolysis is prevented and smooth foaming is achieved. As disclosed in page 15, line 25 to page 16, line 20 of the specification, the vapor pressure reducing agent used in the present invention is highly resistant to hydrolysis. Therefore, the premix composition comprising the vapor pressure reducing agent and HFC-245fa is stable and can be preserved over a long time, and thereby foaming is not hindered and phase separation or precipitation is prevented. As detailed above, the present invention allows HFC-245fa to be present in the premix composition from the beginning.

There is no such disclosure in Singh.

(b) Singh does not teach a premix

Singh et al. (WO 99/05204) discloses in Example 1, relied upon by the rejection, that a polyol blend was made by mixing together all the ingredients listed under "Polyol Side" except the HFC-245fa (page 19, lines 1 to 3). In other words, HFC-245fa was added in a separate step. In the Examples of Singh et al., the polyol component was kept at a low temperature and HFC-245fa was added in a separate step while foaming. Singh et al. does not aim to reduce the vapor pressure of HFC-245fa so that a premix composition, to which HFC-245fa is added in advance (i.e., from the beginning), can be stored and preserved. Basically, HFC-245fa and an organic phosphorous compound (a flame retardant) coexist only when foaming is performed. In this respect, the invention of Singh et al. is clearly different from the present invention.

Specifically, the section of Singh which the Office Action cites to at page 19 states:

Polyol blend was made by mixing together all the ingredients listed under "Polyol Side" except the HFC-245fa using a high speed mixer at room temperature. The polyol blend was added to the "Polyol Side" tank of a Edge-Sweets high pressure impingement mix dispense machine. Thereafter, an appropriate amount of HFC-245fa ... was added to the "Polyol Side" tank and mixed vigorously using an air-mixer attached to the tank. Isocyanate was added to the "Iso side" tank attached to the dispense machine. ...

...The foaming ingredients were shot from the dispense machine into a 5-liter cup...

(emphasis added)

Based on the above, the formation method of the foam for the Examples of Singh does not allow for the HFC-245fa to be added to the pre-mixture until the foam is ready for formation. Hence, Singh does not teach mixing HFC-245fa with a vapor pressure reducing agent of

applicants' formula 1 in a transportable pre-mixture for in-situ foaming. Rather, HFC-245fa is added immediately prior to the polyol mixture (which in Singh contains the flame retardant equivalent of the vapor reducing agent) in an agitated state immediately before foaming.

Applicants' Response to the Claim Rejections under 35 U.S.C. §103

Claims 5, 6, 11-12 and 19-21 are rejected under 35 U.S.C. §103(a) as being unpatentable over Singh et al. (WO 99/05204) as applied to their respective parent claims 4, 10 and 16 detailed above, and further in view of Wicks (U.S. 5,977,196).

Applicants respectfully submit that by addressing the rejection to the parent claims as detailed above, likewise the rejection of claims 5, 6, 11-12 and 19-21 should be considered addressed by nature of their dependency.

In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

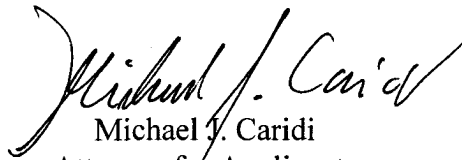
Application No.: 10/534,441
Art Unit: 1796

Response under 37 CFR §1.116
Attorney Docket No.: 052483

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP

A handwritten signature in black ink, reading "Michael J. Caridi". The signature is written in a cursive, flowing style with a large initial "M".

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